Year	5	Topic	Deserts

In this topic, children will learn about the world's deserts, the uses and inhabitants of deserts and how living things adapt to living in such harsh climates, which builds upon previous knowledge of weather patterns and climates, features of biomes and climate change. Children will be introduced to the terms salt plain, mushroom rock and mesa, which builds upon children's knowledge of erosion from their Year 4 topic of rivers. The skills children will develop will increase in complexity: using technology to analyse data and using Google Earth, globes and maps to research and locate places of interest.

Prior Learning

Locational and Place Knowledge:

- Know the features of hot and cold places in the world (Y1)
- Know where the equator, North Pole and South Pole are on a globe (Y1)
- Know the names of and locate the seven continents of the world (Y2)
- Know the names of 4 countries from the Northern Hemisphere and 4 from the Southern Hemisphere (Y3)
- Know, name and locate the main rivers in the UK (Y4)

Human and Physical Geography:

- Children will learn the difference between climate and weather (Y1, Y4)
- Know the name of and locate a number of the world's longest rivers (Y4)
- Explain the features of the water cycle (Y4)

Skills and Fieldwork:

- N/A

Global Citizenship:

- Children will understand how climate change affects the planet (Y4)
- Children will understand how we can reduce our carbon footprint (Y4)

Future Learning

Locational and Place Knowledge:

- Children will know where the main mountain regions are in the UK

Human and Physical Geography:

- Children will know the names of a number of the World's highest mountains
- They will know why industrial areas and ports are important
- They will know the main human and physical differences between developed and developing countries

Skills and Fieldwork:

- Children will use Google Earth to locate a country or place of interest / follow the journey of rivers etc.
- Children will know what most of the symbols on an Ordnance Survey map stand for
- Children will know how to use six-figure grid references

National Curriculum Links

Locational Knowledge:

- Know the names of and locate a number of South or North American countries.
- Know where the Equator, Tropic of Cancer, Tropic of Capricorn and the Greenwich Meridian are on a world map.

Place Knowledge:

- N/A

Human and Physical Geography:

- Know what is meant by biomes and what are the features of a specific biome.
- Know the names of and locate some of the world's deserts.

Skills and Fieldwork:

- Use maps and globes to locate the Equator, Tropics of Cancer and Capricorn and the Greenwich Meridian.

Key Vocabulary

Biome, desert, erosion, salt plain, mushroom rocks, mesa, adaptation, arid/semi-arid, basalt, Aboriginal people, basin, desertification, fault line, fossil fuel, hemisphere, lava rock, marsupial, nomadic, oasis (oases), peninsula, radiate, terrain

Recommended Texts & Web Links

Planet Earth I: Episode 5
Planet Earth II: Episode 4

What pupils need to know or do to be secure

Lesson 1 – What is a desert and where are they found?

Focus: Locating the world's deserts and understanding what defines a desert.

Key Knowledge (Declarative Knowledge)	Activities (Disciplinary Knowledge)	Assessment / Skills
• A desert is any region receiving less than 250mm of rainfall per year – deserts are not always hot. • There are hot deserts (e.g. Sahara, Atacama) and cold deserts (e.g. Antarctic, Gobi).	Google Earth investigation: Using Google Earth on iPads, pupils fly into three named deserts (one hot, one cold, one coastal), exploring each at ground level. They screenshot one key view per desert and annotate it in Pages with the desert's name, continent and compass direction from the UK, then submit via Showbie.	*Name and locate some of the countries and cities of the world and their identifying human and physical characteristics, including hills, mountains, rivers, key topographical features and land-use patterns; and understand how some of these aspects have changed over time. (End of Year 6)*

• Most deserts lie near the Tropics of Cancer and Capricorn or in polar regions. • The Equator, Tropic of Cancer, Tropic of Capricorn and Greenwich Meridian help us locate deserts on a world map.	Quick discussion: Pupils are shown a curated set of photographs and aerial satellite images (sourced from Google Earth) of contrasting desert and non-desert landscapes displayed on a Padlet. They discuss and justify their sorting decisions using the 250mm rainfall definition, using correct geographical vocabulary in their responses which are posted on the Padlet for whole class feedback.	*Use a range of geographical resources to give detailed descriptions and opinions of the characteristic features of a location. (End of Year 6)*
	Map annotation task: Pupils annotate a printed world map identifying the geographical significance of the Equator, Tropics of Cancer and Capricorn, Arctic and Antarctic Circles and time zones. They shade desert belts and create a map key using standard Ordnance Survey symbols. Completed maps are scanned and uploaded to Showbie.	*Identify and describe the geographical significance of latitude, longitude, Equator, Northern Hemisphere, Southern Hemisphere, the Tropics of Cancer and Capricorn, Arctic and Antarctic Circle, and time zones (including day and night). (End of Year 6)*

Lesson 2 – How are deserts formed and what do they look like?

Focus: Understanding the physical processes that shape desert landscapes.

Key Knowledge (Declarative Knowledge)	Activities (Disciplinary Knowledge)	Assessment / Skills
• Deserts form where warm, dry air sinks and prevents rainfall – this often occurs near the Tropics. • Wind and water cause erosion, creating distinctive landforms: mushroom rocks, mesas, salt plains and sand dunes. • Salt plains form in cold deserts when water evaporates leaving mineral deposits behind. • Mesas are flat-topped hills shaped by water eroding softer rock away over thousands of years.	Source analysis: Pupils study photographs, aerial images (from Google Earth) and written descriptions of five desert landforms (sand dune, mesa, salt plain, mushroom rock, oasis). They match each to its description, write a sentence explaining the formation process and discuss which type of geographical representation (aerial satellite vs ground-level photograph vs written text) is most useful and why.	*Analyse and give views on the effectiveness of different geographical representations of a location (such as aerial images compared with maps and topological maps). (End of Year 6)*
	Annotated diagram: Pupils choose one desert landform and produce a labelled diagram in Pages on their iPad, explaining how erosion or deposition created it, using key geographical vocabulary (erosion, deposition, weathering, sediment, climate zone, biome, vegetation belt). Finished diagrams are uploaded to Showbie.	*Describe and understand key aspects of physical geography, including: climate zones, biomes and vegetation belts, rivers, mountains, volcanoes and earthquakes and the water cycle. (End of Year 6)*

	Discussion: Teacher-led comparison of climate data from two contrasting deserts (Sahara and Gobi) displayed on screen. Pupils identify and explain reasons for similarities and differences in temperature and rainfall patterns, linking physical geography to the position of each desert within a climate zone. Pupils record their key comparisons as a voice note on Showbie.	*Understand some of the reasons for geographical similarities and differences between countries. (End of Year 6)*

Lesson 3 – Who and what lives in deserts?		
Focus: Exploring human settlement and wildlife in desert biomes.		
Key Knowledge (Declarative Knowledge)	**Activities (Disciplinary Knowledge)**	**Assessment / Skills**
• Despite harsh conditions, deserts support human communities, unique wildlife and specialised plants. • Animals such as camels, meerkats and the fennec fox have adapted features (e.g. humps, large ears) to survive heat and water scarcity. • Cities such as Dubai, Las Vegas and Abu Dhabi have been built in deserts – water is often transported from hundreds of miles away. • Indigenous peoples such as the San of the Kalahari and Aboriginal Australians have developed traditional ways of life suited to desert environments. *DISCO (Imagine): Imagine you building a house in a desert city. What features would you include to help you live safely and comfortably?*	Case study comparison using Google Earth: Pupils use Google Earth to virtually visit one desert city (Dubai), exploring its urban landscape, infrastructure and surrounding desert environment. Using a provided data card, they note the city's population, water source and key economic activity, then write two sentences explaining how the physical features of the desert have shaped human activity there. Findings are recorded in Pages.	*Identify and describe how the physical features affect the human activity within a location. (End of Year 6)*
	Data analysis task: Using provided climate and population data for desert cities (an A.I tool will produce this), pupils collect and analyse statistics – creating a graph in Numbers showing rainfall versus population size – and write a conclusion about the relationship between water availability and settlement patterns. Graphs are uploaded to Showbie.	*Collect and analyse statistics and other information in order to draw clear conclusions about locations. (End of Year 6)*
	Quick source analysis on Padlet: Pupils examine two short video or written accounts from a San community member and an Aboriginal elder about life in their desert environment. Class discussion: How do these communities reflect the geographical diversity of the world? Pupils post two key observations to the	*Describe geographical diversity across the world. (End of Year 6)*

	class Padlet, then respond to a peer's post with a geographical connection.	

Lesson 4 – What are deserts used for?

Focus: Understanding the economic value and human uses of desert regions.

Key Knowledge (Declarative Knowledge)	Activities (Disciplinary Knowledge)	Assessment / Skills
• Deserts contain valuable natural resources including oil, natural gas, salt, gold and diamonds. • Many Middle Eastern countries generate great wealth from oil found beneath desert landscapes. • Deserts are also used for scientific research, renewable energy (solar farms), film production and tourism. • Economic activity in deserts creates trade links between countries and affects the distribution of natural resources globally.	Map and trade links task: Pupils use a printed world map to identify key desert nations and annotate it with some of their main natural resources, drawing arrows to show some trade links between resource nations and importing countries. Completed maps are scanned and uploaded to Showbie.	*Describe and understand key aspects of human geography, including: settlements, land use, economic activity including trade links, and the distribution of natural resources including energy, food, minerals and water supplies. (End of Year 6)*
	Interconnection discussion: Pupils explore how desert nations and non-desert nations depend on each other through resource trade (e.g. oil from Saudi Arabia to the UK). In small groups they discuss how these countries are interconnected and interdependent, then each group records a 30-second summary and uploads to a class Padlet.	*Describe how countries and geographical regions are interconnected and interdependent. (End of Year 6)*
	Digital mapping task: Pupils use Google Earth to locate and explore a specific economic use of a desert (e.g. the Ivanpah Solar Farm in the Mojave Desert). They screenshot the satellite view and annotate it in Pages, creating a map key using standard Ordnance Survey symbols to identify land-use patterns visible from the aerial perspective.	*Create maps of locations identifying patterns (such as: land use, climate zones, population densities, height of land). (End of Year 6)*

Lesson 5 – How do living things adapt to desert life?

Focus: Exploring physical and behavioural adaptations of plants and animals.

Key Knowledge (Declarative Knowledge)	Activities (Disciplinary Knowledge)	Assessment / Skills
• Plants and animals have evolved over thousands of years to survive extreme heat, cold and water scarcity. • Camels store fat in humps for energy; cacti store water in their thick stems and have shallow roots to collect rainfall quickly. • Behavioural adaptations include being nocturnal, burrowing underground and huddling to retain warmth. • The Kalahari Desert supports a rich variety of wildlife, showing that deserts can have significant biodiversity. *DISCO (Develop): How have some animals evolved to live in deserts? Give two examples – describe their features and how this support their survival.*	Adaptation sorting activity: Pupils are given cards describing different animal and plant adaptations. They sort them into physical, behavioural and structural categories, linking each to a specific survival challenge (water, temperature, food) and explaining how the physical desert environment has directly caused each adaptation. Sorted results are photographed and uploaded to Showbie.	*Identify and describe how the physical features affect the human activity within a location. (End of Year 6)*
	Design and annotate task: Pupils design an imaginary desert creature, combining real adaptations from different animals and annotating their design with labels explaining each adaptation and its purpose. They write a short geographical description of the desert biome and vegetation belt in which their creature would live. Finished work to be uploaded to Showbie or a class Padlet and shared with the class.	*Describe and understand key aspects of physical geography, including: climate zones, biomes and vegetation belts, rivers, mountains, volcanoes and earthquakes and the water cycle. (End of Year 6)*
	Quick comparison discussion: Teacher displays images of a fennec fox and an Arctic fox side by side on screen. Pupils discuss: what is the same, what is different, and why? They then record a single-sentence voice note explaining the most important difference between the two animals' adaptations and why it is necessary for their desert environment.	*Use a range of geographical resources to give detailed descriptions and opinions of the characteristic features of a location. (End of Year 6)*

Lesson 6 – Are deserts changing and what does the future hold?		
Focus: Understanding desertification, climate change and the future of desert regions.		
Key Knowledge (Declarative Knowledge)	**Activities (Disciplinary Knowledge)**	**Assessment / Skills**
• Desertification is the process by which fertile land becomes desert due to drought, deforestation and poor farming practices. • Climate change is causing deserts to expand, threatening communities who live on their edges. • Some desert regions are at risk of disappearing due to human activity, while others are growing. • Geographers use data, satellite images and maps to monitor how desert regions are changing over time.	Google Earth time-lapse analysis: Pupils use Google Earth's historical imagery tool to observe how the Sahara's edge has shifted in the Sahel region over several decades. They screenshot two contrasting time periods, annotate them in Pages to show the change and write an explanation using geographical vocabulary (desertification, drought, climate change, land-use change).	*Describe how locations around the world are changing and explain some of the reasons for change. (End of Year 6)*
	Data analysis: Pupils examine a graph showing rainfall data over 50 years for a desert-edge location. They analyse the statistics, identify the trend and write a conclusion in Pages explaining what the data shows about climate change and its impact on communities living nearby. Completed analysis is uploaded to Showbie.	*Collect and analyse statistics and other information in order to draw clear conclusions about locations. (End of Year 6)*
	End-of-unit iMovie documentary: Using footage, screenshots and narration clips saved throughout the unit to Showbie, pupils spend the final portion of the lesson assembling a short iMovie documentary entitled 'Deserts: Past, Present and Future'. The film should include their Google Earth screenshots, annotated maps and at least one piece of their own narration. The teacher should ensure pupils have been saving assets to Showbie in previous lessons to make this task achievable. Finished films are shared via Showbie and presented in a whole class screening session.	*Use a range of geographical resources to give detailed descriptions and opinions of the characteristic features of a location. (End of Year 6)*

Enrichment

- Visit to Birmingham Botanical Garden (Arid House) to observe desert plants
- Desert Biome Immersion Day – role-play life in a desert community
- Google Earth Virtual Desert Safari – exploring the Sahara, Gobi and Atacama
- Climate Data Analysis Workshop – graphing rainfall trends and linking to desertification
- 'Design a Desert City of the Future' STEM Challenge
- Desert Art Workshop – creating landscape artwork inspired by desert formations
- Debate: 'Should deserts be developed for economic gain?'
- End-of-Unit iMovie Film Festival – screening class documentaries 'Deserts: Past, Present and Future'